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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/416,618	10/12/1999	ROBERT PAASCH	10980780-1	6379

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EXAMINER	
STEWART JR, CHARLES W	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/416,618	Applicant(s) ARKSEY, MATTHEW L.	
	Examiner Charles W. Stewart, Jr.	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *June 4, 2001 (Paper No. 6)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-24 and 26-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26 and 27* is/are allowed.

6)☐ Claim(s) *1-6,10-14,16-20,23 and 28* is/are rejected.

7)☐ Claim(s) *7,9,15,21,22 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 10-14, 16-20, 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su et al. US 5,929,875 in view of Tanaka et al. US 5,734,391.

Su et al. discloses a print head apparatus, comprising:

a substrate 110.

an ink well defined proximate said ink expulsion mechanism and a nozzle formed as an egress 106 from said ink expulsion mechanism 112 and a nozzle formed as an egree from said ink well 99; a first pressure sensor that is formed substantially at said ink well and configured to detect pressure waves induced by a firing of said ink expulsion mechanism (col. 15, lines 60-65).

wherein said ink expulsion mechanism is thermally actuated (fig. 4).

a sensor mechanism formed on said substrate that is capable of detecting signals indicative of when said nozzle is clogged (see Table 1, col. 20, in terms of Table 1 "clogged nozzles").

wherein said sensor mechanism is capable of detecting signals indicative of when said nozzle is unclogged (col. 20, lines 7-10 and table 1 "in term of nozzle condition".

wherein said sensor mechanism is capable of detecting signals indicative of one or more of the group of condition including dry-fire and no-fire conditions (see E. Table 1).

wherein said sensor includes piezoelectric material (col. 15, lines 40-45).

logic coupled to said sensor mechanism that is capable of determining a magnitude and timing of a pressure wave generated by a firing of said ink expulsion mechanism (fig. 4).

detecting within said print head a firing quality related characteristic of a resultant pressure wave generated by said attempt to expel said volume of ink through said nozzle (col. 10, lines 33-35).

the step of determining from said detected characteristic a status of said attempted expulsion of said volume of ink (fig. 11, element 238 "in terms of Test Conditions & parameters).

However, Su et al. does not disclose having wherein said sensor includes one or more of the group of sensor including an interdigitated pressure wave transducer and an piezoelectric acoustic wave transducer; a cover plate having a nozzle therein formed on said barrier layer and positioned such that said nozzle is aligned with said ink expulsion mechanism, said substrate, a barrier and cover plate defining said ink well; and

Nevertheless, Tanaka et al. denotes 49 a pressure sensor provided within a common fluid chamber 17 for communicating with the respective fluid paths 15, and being made of PZT (piezoelectric transducer) (col. 13, lines 50-57) and a cover plate having a nozzle therein formed on said barrier layer and positioned such that said nozzle (fig. 6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a sensor includes one or more of the group of sensor and a cover plate having a nozzle therein formed on said barrier layer and positioned such that said nozzle, as taught by Tanaka et al., for the purpose of detecting malfunction of a printhead while in a printing mode.

Allowable Subject Matter

3. Claims 26 and 27 are allowed.

In the following contains a statement of reasons for the indication of allowable subject matter: Claim 26 recites the allowable subject matter of detecting a second magnitude of a pressure wave in the range of 15% to 25% less than said first magnitude whereby a misfiring nozzle may be detected. Claim 27 recites the allowable subject matter of detecting a second timing of an arrival of a pressure wave in the range of 15% to 20% earlier than said first timing whereby a misfiring nozzle may be detected.

4. Claims 7, 9, 15, 21, 22, and 24 are objected to as being dependent upon a rejected base claim, but would have been allowable if rewritten in independent form including all of the limitation of the base claim and by intervening claims.

Contact information

5. Any inquiry this communication or earlier communications should be directed to Examiner Charles Stewart, Jr. whose telephone number is (571) 272-2154.

Charles Stewart, Jr.

September 30, 2004

Stephen D. Meier
Primary Examiner